FIG.1

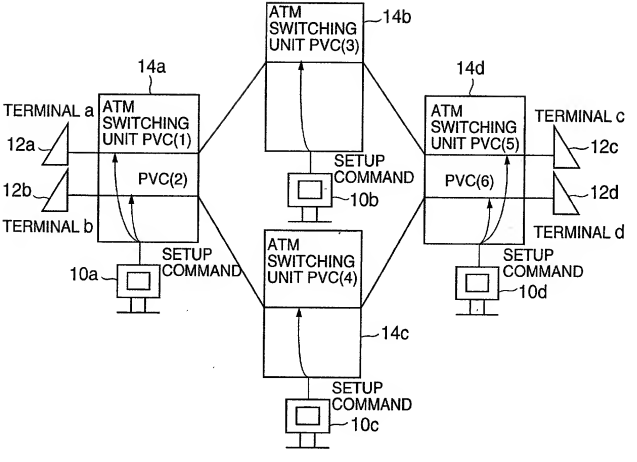
ATM SWITCHING UNIT PVC(3)
14b
14a
14d
TERMINAL a
ATM SWITCHING UNIT PVC(1)
ATM SWITCHING UNIT PVC(5)
TERMINAL c
12a
12c
SETUP COMMAND
12b
PVC(2)
PVC(6)
12d
10b
TERMINAL b
TERMINAL d
ATM SWITCHING UNIT PVC(4)
SETUP COMMAND
SETUP COMMAND
10a
10d
14c
SETUP COMMAND
10c

FIG.2

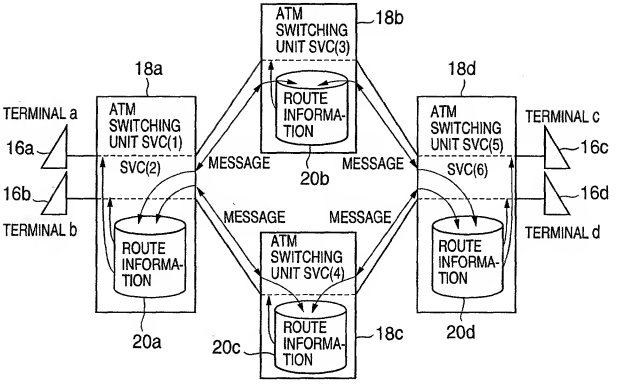
ATM SWITCHING UNIT SVC(3)
18b
18a
18d
TERMINAL a
ATM SWITCHING UNIT SVC(1)
ROUTE INFORMA-TION
ATM SWITCHING UNIT SVC(5)
TERMINAL c
16a
SVC(2)
MESSAGE
MESSAGE
SVC(6)
16c
20b
16b
16d
TERMINAL b
MESSAGE
MESSAGE
TERMINAL d
ATM SWITCHING UNIT SVC(4)
ROUTE INFORMA-TION
ROUTE INFORMA-TION
ROUTE INFORMA-TION
20a
20c
18c
20d

FIG.3

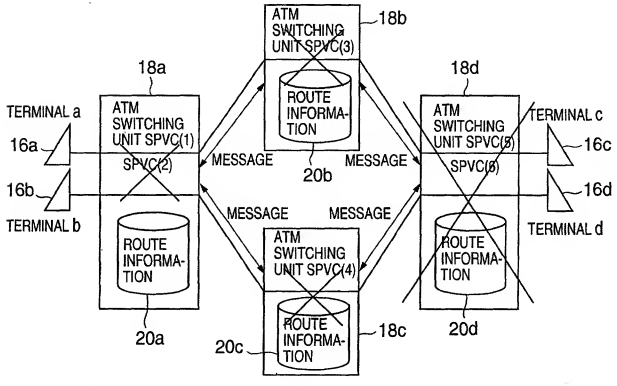
ATM SWITCHING UNIT SPVC(3)
18b
18a
18d
TERMINAL a
ATM SWITCHING UNIT SPVC(1)
ROUTE INFORMA-TION
ATM SWITCHING UNIT SPVC(5)
TERMINAL c
16a
SPVC(2)
MESSAGE
MESSAGE
SPVC(6)
16c
20b
16b
16d
TERMINAL b
MESSAGE
MESSAGE
TERMINAL d
ATM SWITCHING UNIT SPVC(4)
ROUTE INFORMA-TION
ROUTE INFORMA-TION
ROUTE INFORMA-TION
20a
20c
18c
20d

FIG.4

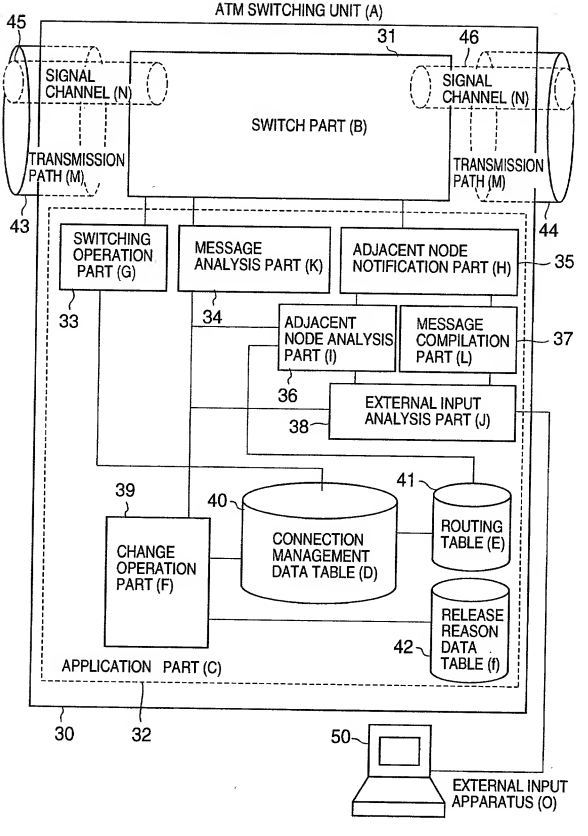
ATM SWITCHING UNIT (A)
45
31
46
SIGNAL CHANNEL (N)
SIGNAL CHANNEL (N)
SWITCH PART (B)
TRANSMISSION PATH (M)
TRANSMISSION PATH (M)
43
44
SWITCHING OPERATION PART (G)
MESSAGE ANALYSIS PART (K)
ADJACENT NODE NOTIFICATION PART (H)
35
33
34
ADJACENT NODE ANALYSIS PART (I)
MESSAGE COMPILATION PART (L)
37
36
EXTERNAL INPUT ANALYSIS PART (J)
38
39
41
40
CHANGE OPERATION PART (F)
CONNECTION MANAGEMENT DATA TABLE (D)
ROUTING TABLE (E)
RELEASE REASON DATA TABLE (f)
42
APPLICATION PART (C)
30
32
50
EXTERNAL INPUT APPARATUS (O)

FIG.5

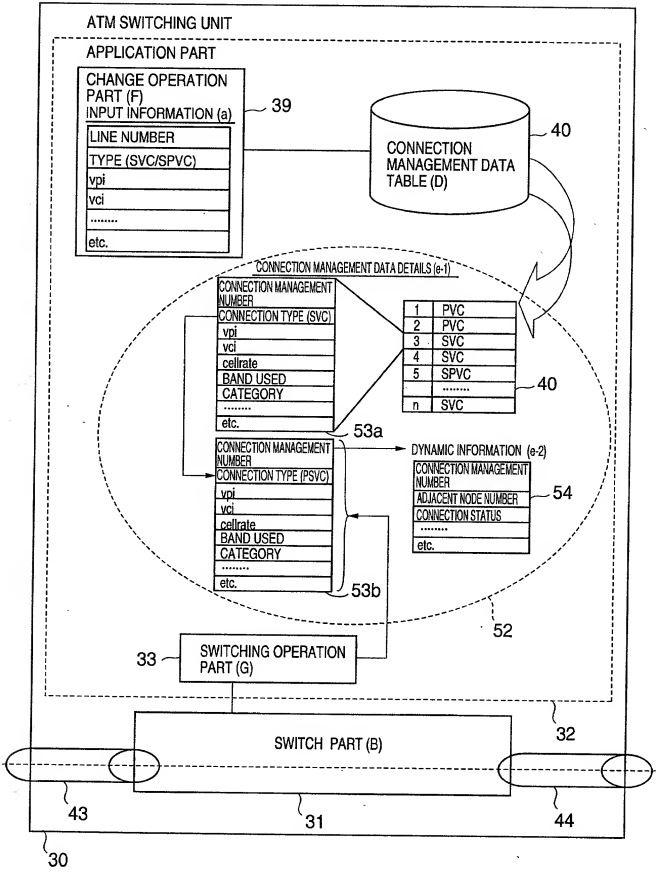
ATM SWITCHING UNIT
APPLICATION PART
CHANGE OPERATION PART (F)
INPUT INFORMATION (a)
39
LINE NUMBER
TYPE (SVC/SPVC)
vpi
vci
.....
etc.
CONNECTION MANAGEMENT DATA TABLE (D)
40
CONNECTION MANAGEMENT DATA DETAILS (e-1)
CONNECTION MANAGEMENT NUMBER
CONNECTION TYPE (SVC)
vpi
vci
cellrate
BAND USED
CATEGORY
.....
etc.
1 PVC
2 PVC
3 SVC
4 SVC
5 SPVC
.....
n SVC
40
53a
CONNECTION MANAGEMENT NUMBER
CONNECTION TYPE (PSVC)
vpi
vci
cellrate
BAND USED
CATEGORY
.....
etc.
DYNAMIC INFORMATION (e-2)
CONNECTION MANAGEMENT NUMBER
ADJACENT NODE NUMBER
CONNECTION STATUS
.....
etc.
54
53b
52
33
SWITCHING OPERATION PART (G)
32
SWITCH PART (B)
43
31
44
30

FIG.6

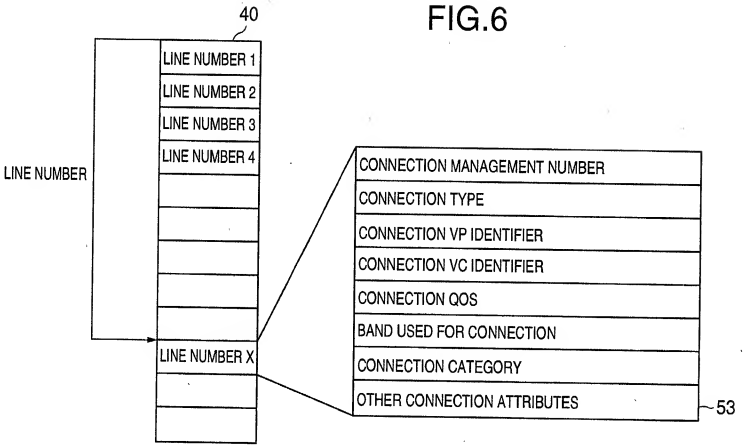
40
LINE NUMBER
LINE NUMBER 1
LINE NUMBER 2
LINE NUMBER 3
LINE NUMBER 4
LINE NUMBER X
CONNECTION MANAGEMENT NUMBER
CONNECTION TYPE
CONNECTION VP IDENTIFIER
CONNECTION VC IDENTIFIER
CONNECTION QOS
BAND USED FOR CONNECTION
CONNECTION CATEGORY
OTHER CONNECTION ATTRIBUTES
53

FIG.7

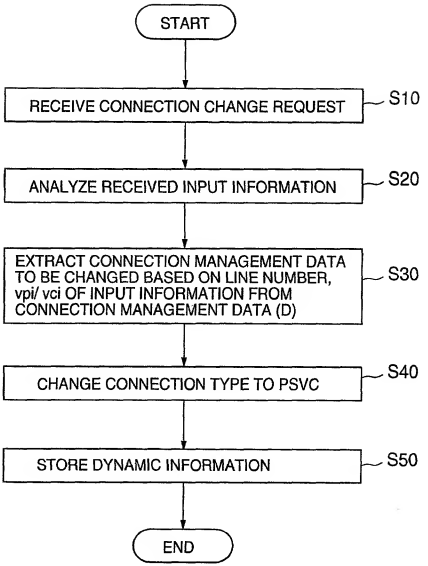
START
RECEIVE CONNECTION CHANGE REQUEST
S10
ANALYZE RECEIVED INPUT INFORMATION
S20
EXTRACT CONNECTION MANAGEMENT DATA TO BE CHANGED BASED ON LINE NUMBER, vpi/ vci OF INPUT INFORMATION FROM CONNECTION MANAGEMENT DATA (D)
S30
CHANGE CONNECTION TYPE TO PSVC
S40
STORE DYNAMIC INFORMATION
S50
END

FIG.8

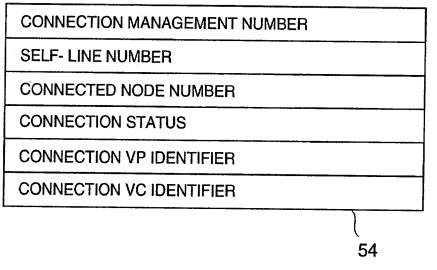

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FIG.9A

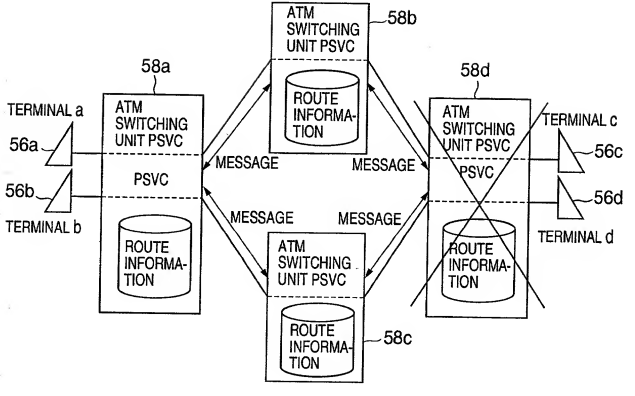

ATM SWITCHING UNIT PSVC
58b
58a
58d
TERMINAL a
56a
56b
TERMINAL b
PSVC
ROUTE INFORMATION
MESSAGE
TERMINAL c
56c
56d
TERMINAL d
58c

FIG.9B

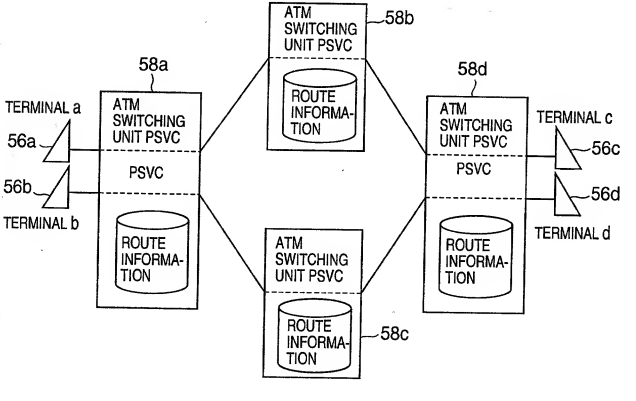

ATM SWITCHING UNIT PSVC
58b
58a
58d
TERMINAL a
56a
56b
TERMINAL b
PSVC
ROUTE INFORMATION
TERMINAL c
56c
56d
TERMINAL d
58c

FIG.10

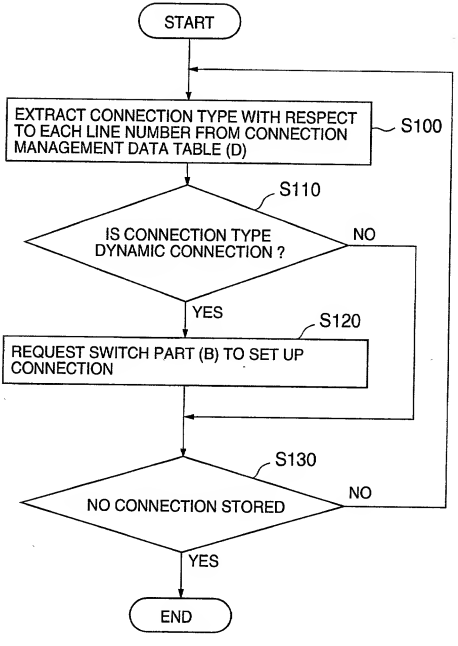
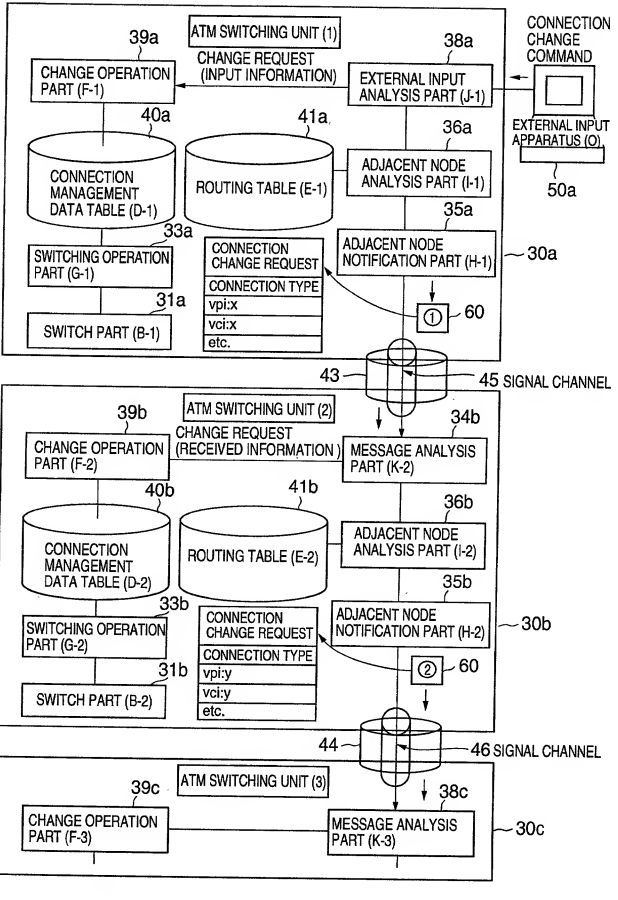

START
EXTRACT CONNECTION TYPE WITH RESPECT TO EACH LINE NUMBER FROM CONNECTION MANAGEMENT DATA TABLE (D)
S100
S110
IS CONNECTION TYPE DYNAMIC CONNECTION ?
NO
YES
S120
REQUEST SWITCH PART (B) TO SET UP CONNECTION
S130
NO CONNECTION STORED
NO
YES
END

FIG.11


ATM SWITCHING UNIT (1)
39a
CHANGE OPERATION PART (F-1)
CHANGE REQUEST (INPUT INFORMATION)
38a
EXTERNAL INPUT ANALYSIS PART (J-1)
CONNECTION CHANGE COMMAND
EXTERNAL INPUT APPARATUS (O)
50a
40a
CONNECTION MANAGEMENT DATA TABLE (D-1)
41a
ROUTING TABLE (E-1)
36a
ADJACENT NODE ANALYSIS PART (I-1)
35a
33a
SWITCHING OPERATION PART (G-1)
CONNECTION CHANGE REQUEST
CONNECTION TYPE
vpi:x
vci:x
etc.
ADJACENT NODE NOTIFICATION PART (H-1)
30a
31a
SWITCH PART (B-1)
①
60
43
45 SIGNAL CHANNEL
ATM SWITCHING UNIT (2)
39b
CHANGE OPERATION PART (F-2)
CHANGE REQUEST (RECEIVED INFORMATION)
34b
MESSAGE ANALYSIS PART (K-2)
40b
CONNECTION MANAGEMENT DATA TABLE (D-2)
41b
ROUTING TABLE (E-2)
36b
ADJACENT NODE ANALYSIS PART (I-2)
35b
33b
SWITCHING OPERATION PART (G-2)
CONNECTION CHANGE REQUEST
CONNECTION TYPE
vpi:y
vci:y
etc.
ADJACENT NODE NOTIFICATION PART (H-2)
30b
31b
SWITCH PART (B-2)
②
60
44
46 SIGNAL CHANNEL
ATM SWITCHING UNIT (3)
39c
38c
CHANGE OPERATION PART (F-3)
MESSAGE ANALYSIS PART (K-3)
30c

10/27

FIG.12

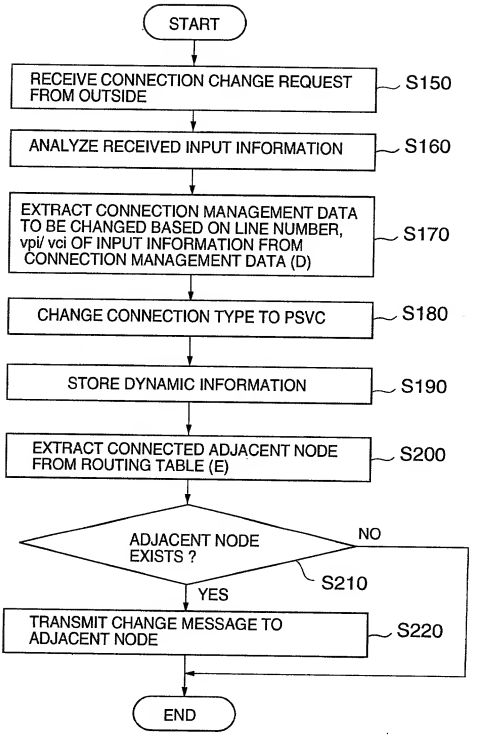

START
RECEIVE CONNECTION CHANGE REQUEST FROM OUTSIDE
S150
ANALYZE RECEIVED INPUT INFORMATION
S160
EXTRACT CONNECTION MANAGEMENT DATA TO BE CHANGED BASED ON LINE NUMBER, vpi/ vci OF INPUT INFORMATION FROM CONNECTION MANAGEMENT DATA (D)
S170
CHANGE CONNECTION TYPE TO PSVC
S180
STORE DYNAMIC INFORMATION
S190
EXTRACT CONNECTED ADJACENT NODE FROM ROUTING TABLE (E)
S200
ADJACENT NODE EXISTS ?
NO
S210
YES
TRANSMIT CHANGE MESSAGE TO ADJACENT NODE
S220
END

FIG.13

REQUEST INFORMATION HEADER
MESSAGE TYPE 1: CHANGE REQUEST 2: RELEASE REQUEST
AUTOMATIC- CHANGE - ENABLED LINE NUMBER
AUTOMATIC CHANGE CONNECTION TYPE
vpi
vci
ADDITIONAL INFORMATION

FIG.14

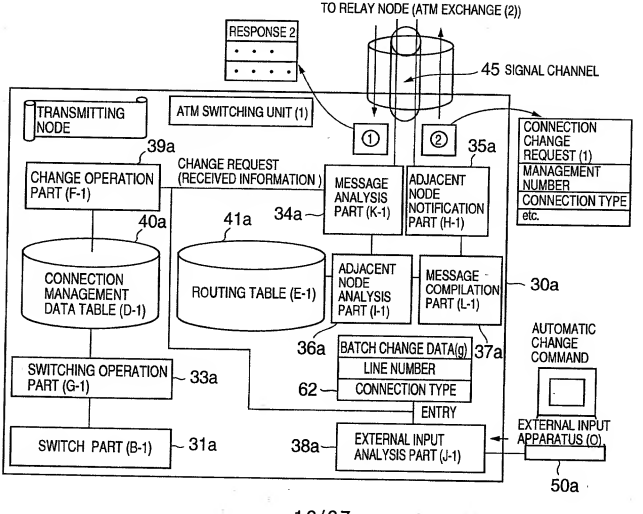


FIG.15

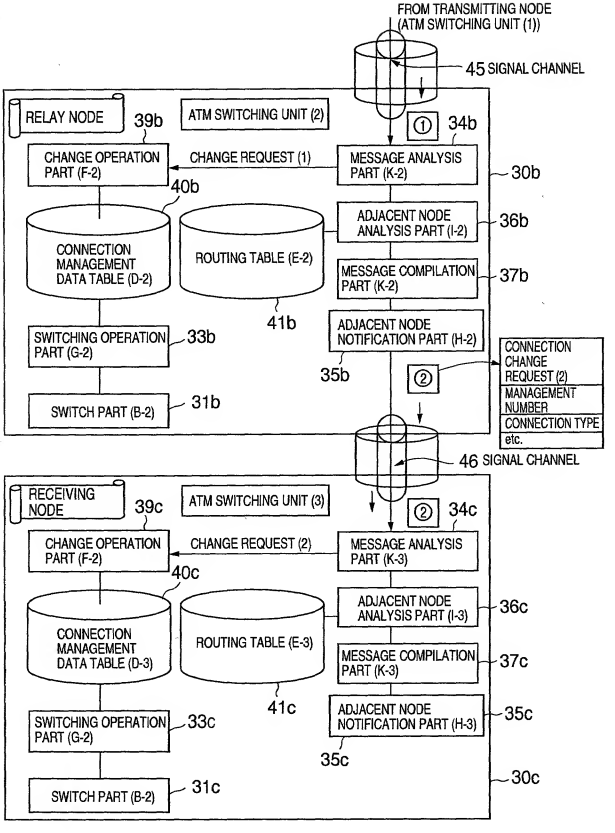

FROM TRANSMITTING NODE (ATM SWITCHING UNIT (1))
45 SIGNAL CHANNEL
RELAY NODE
39b
ATM SWITCHING UNIT (2)
① 34b
CHANGE OPERATION PART (F-2)
CHANGE REQUEST (1)
MESSAGE ANALYSIS PART (K-2)
30b
40b
ADJACENT NODE ANALYSIS PART (I-2)
36b
CONNECTION MANAGEMENT DATA TABLE (D-2)
ROUTING TABLE (E-2)
MESSAGE COMPILATION PART (K-2)
37b
41b
SWITCHING OPERATION PART (G-2)
33b
ADJACENT NODE NOTIFICATION PART (H-2)
35b
②
CONNECTION CHANGE REQUEST (2)
MANAGEMENT NUMBER
CONNECTION TYPE
etc.
SWITCH PART (B-2)
31b
46 SIGNAL CHANNEL
RECEIVING NODE
39c
ATM SWITCHING UNIT (3)
② 34c
CHANGE OPERATION PART (F-2)
CHANGE REQUEST (2)
MESSAGE ANALYSIS PART (K-3)
40c
ADJACENT NODE ANALYSIS PART (I-3)
36c
CONNECTION MANAGEMENT DATA TABLE (D-3)
ROUTING TABLE (E-3)
MESSAGE COMPILATION PART (K-3)
37c
41c
SWITCHING OPERATION PART (G-2)
33c
ADJACENT NODE NOTIFICATION PART (H-3)
35c
35c
30c
SWITCH PART (B-2)
31c

FIG.16

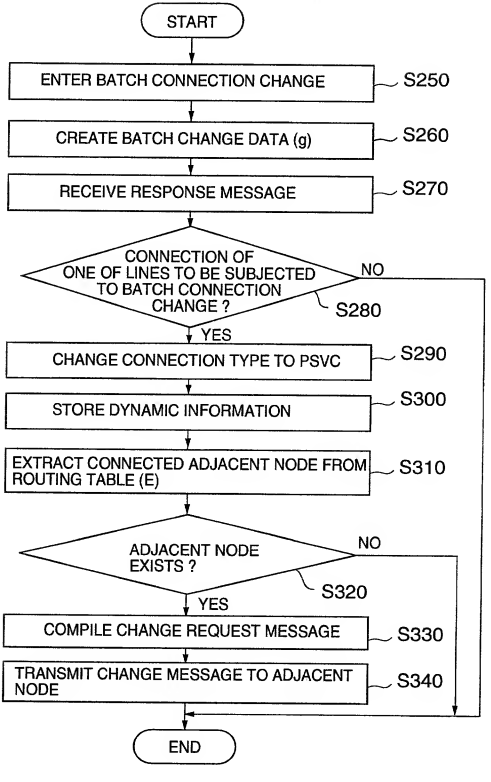

START
ENTER BATCH CONNECTION CHANGE
S250
CREATE BATCH CHANGE DATA (g)
S260
RECEIVE RESPONSE MESSAGE
S270
CONNECTION OF ONE OF LINES TO BE SUBJECTED TO BATCH CONNECTION CHANGE ?
NO
S280
YES
CHANGE CONNECTION TYPE TO PSVC
S290
STORE DYNAMIC INFORMATION
S300
EXTRACT CONNECTED ADJACENT NODE FROM ROUTING TABLE (E)
S310
ADJACENT NODE EXISTS ?
NO
S320
YES
COMPILE CHANGE REQUEST MESSAGE
S330
TRANSMIT CHANGE MESSAGE TO ADJACENT NODE
S340
END

FIG.17

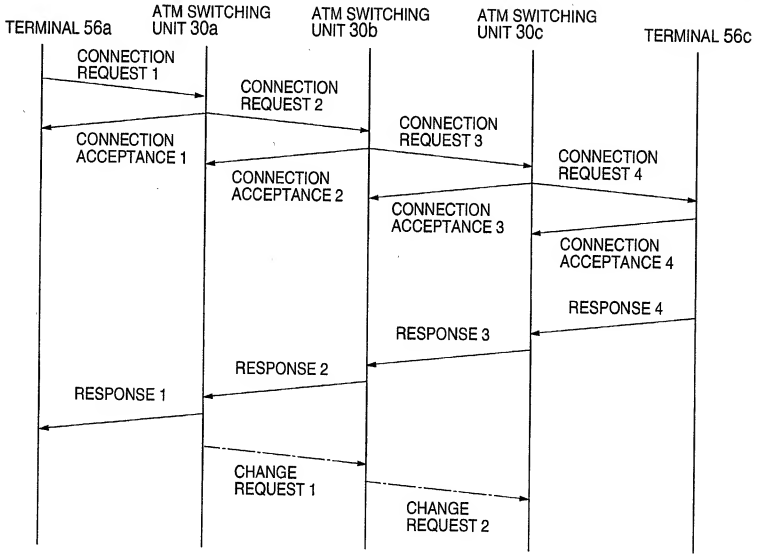

TERMINAL 56a
ATM SWITCHING UNIT 30a
ATM SWITCHING UNIT 30b
ATM SWITCHING UNIT 30c
TERMINAL 56c
CONNECTION REQUEST 1
CONNECTION REQUEST 2
CONNECTION REQUEST 3
CONNECTION REQUEST 4
CONNECTION ACCEPTANCE 1
CONNECTION ACCEPTANCE 2
CONNECTION ACCEPTANCE 3
CONNECTION ACCEPTANCE 4
RESPONSE 4
RESPONSE 3
RESPONSE 2
RESPONSE 1
CHANGE REQUEST 1
CHANGE REQUEST 2

FIG.18

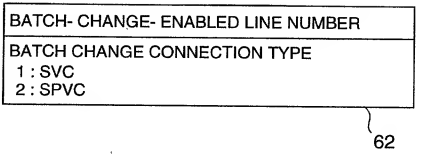


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FIG.19

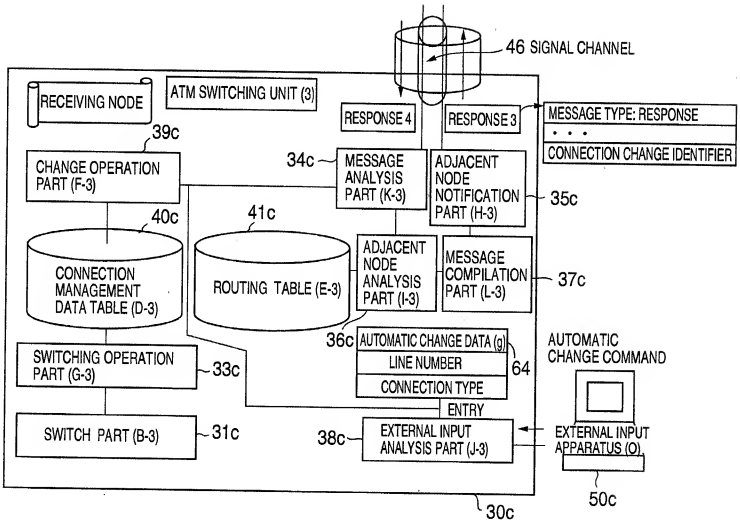
46 SIGNAL CHANNEL
RECEIVING NODE
ATM SWITCHING UNIT (3)
RESPONSE 4
RESPONSE 3
MESSAGE TYPE: RESPONSE
CONNECTION CHANGE IDENTIFIER
39c
CHANGE OPERATION PART (F-3)
34c
MESSAGE ANALYSIS PART (K-3)
ADJACENT NODE NOTIFICATION PART (H-3)
35c
40c
41c
CONNECTION MANAGEMENT DATA TABLE (D-3)
ROUTING TABLE (E-3)
ADJACENT NODE ANALYSIS PART (I-3)
MESSAGE COMPILATION PART (L-3)
37c
36c
AUTOMATIC CHANGE DATA (g)
LINE NUMBER
CONNECTION TYPE
ENTRY
64
AUTOMATIC CHANGE COMMAND
SWITCHING OPERATION PART (G-3)
33c
SWITCH PART (B-3)
31c
38c
EXTERNAL INPUT ANALYSIS PART (J-3)
EXTERNAL INPUT APPARATUS (O)
50c
30c

FIG.20

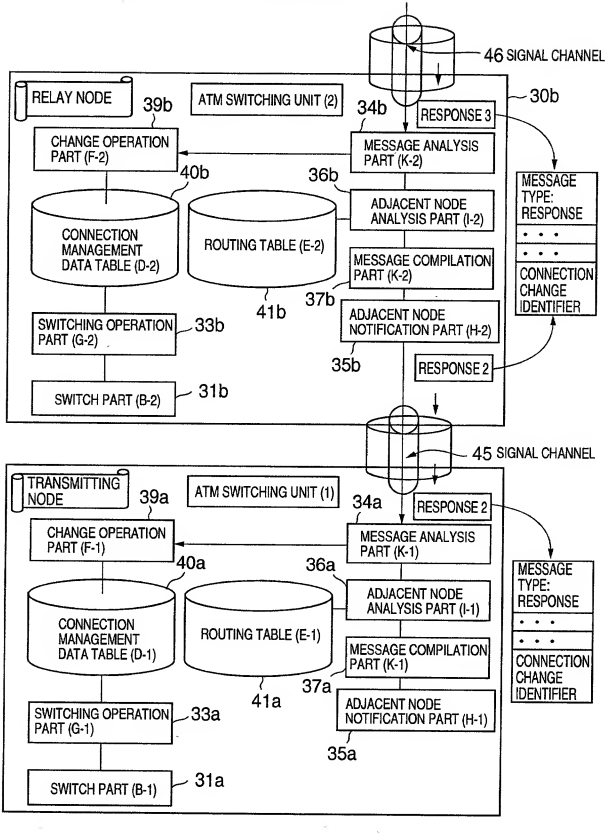

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FIG.21

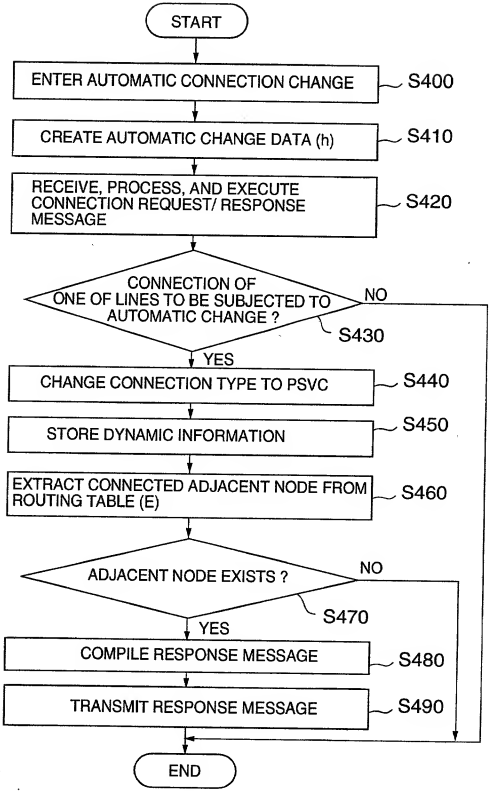
START
ENTER AUTOMATIC CONNECTION CHANGE
S400
CREATE AUTOMATIC CHANGE DATA (h)
S410
RECEIVE, PROCESS, AND EXECUTE CONNECTION REQUEST/ RESPONSE MESSAGE
S420
CONNECTION OF ONE OF LINES TO BE SUBJECTED TO AUTOMATIC CHANGE ?
NO
S430
YES
CHANGE CONNECTION TYPE TO PSVC
S440
STORE DYNAMIC INFORMATION
S450
EXTRACT CONNECTED ADJACENT NODE FROM ROUTING TABLE (E)
S460
ADJACENT NODE EXISTS ?
NO
S470
YES
COMPILE RESPONSE MESSAGE
S480
TRANSMIT RESPONSE MESSAGE
S490
END

FIG.22

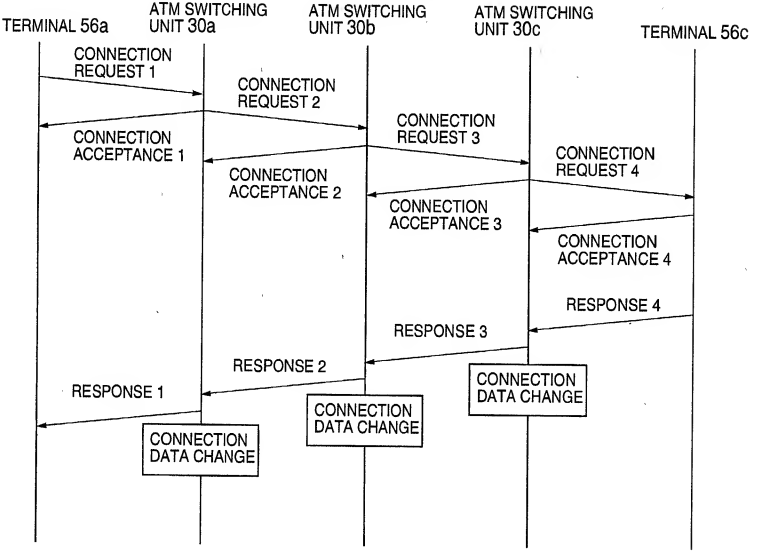
TERMINAL 56a
ATM SWITCHING UNIT 30a
ATM SWITCHING UNIT 30b
ATM SWITCHING UNIT 30c
TERMINAL 56c
CONNECTION REQUEST 1
CONNECTION REQUEST 2
CONNECTION REQUEST 3
CONNECTION REQUEST 4
CONNECTION ACCEPTANCE 1
CONNECTION ACCEPTANCE 2
CONNECTION ACCEPTANCE 3
CONNECTION ACCEPTANCE 4
RESPONSE 4
RESPONSE 3
RESPONSE 2
RESPONSE 1
CONNECTION DATA CHANGE
CONNECTION DATA CHANGE
CONNECTION DATA CHANGE

FIG.23

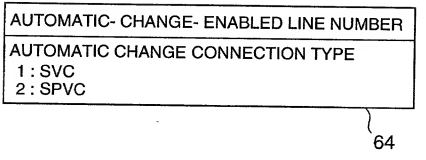

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FIG.24

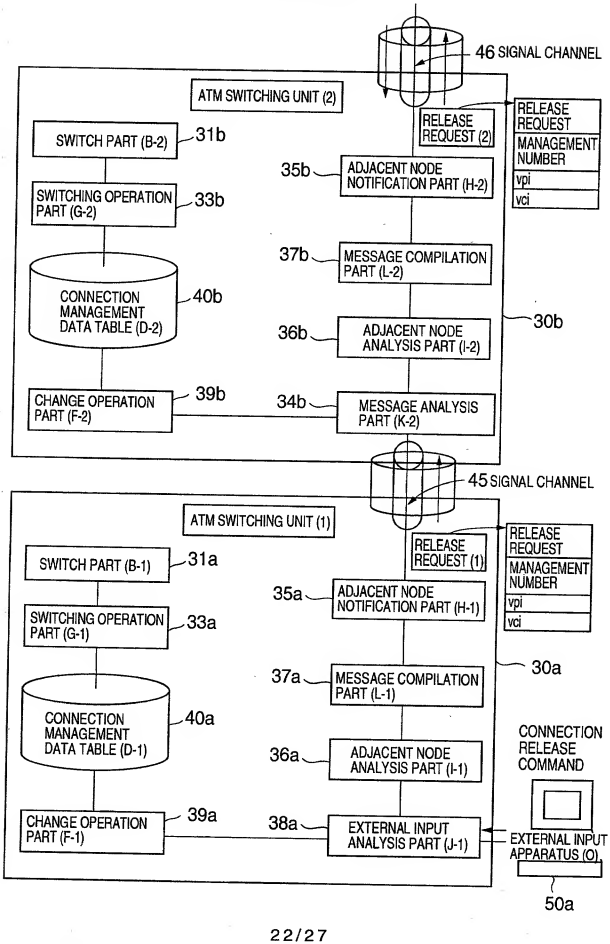

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FIG.25

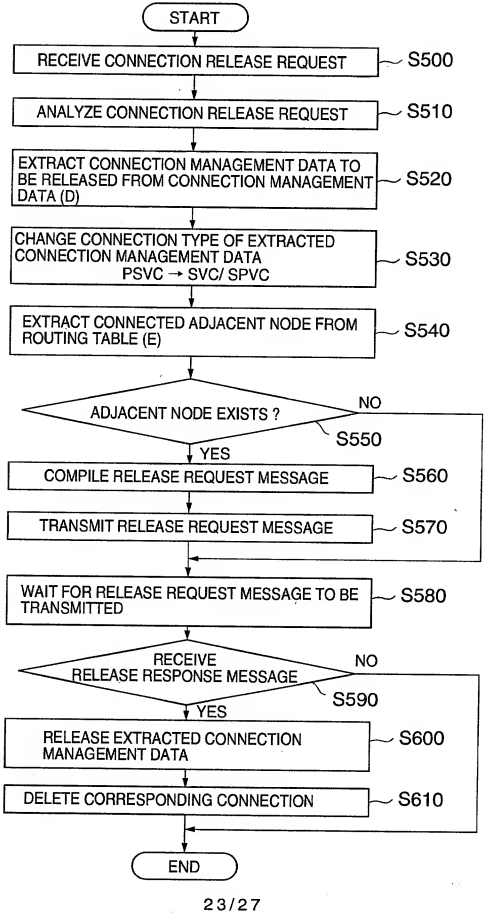

START
RECEIVE CONNECTION RELEASE REQUEST
S500
ANALYZE CONNECTION RELEASE REQUEST
S510
EXTRACT CONNECTION MANAGEMENT DATA TO BE RELEASED FROM CONNECTION MANAGEMENT DATA (D)
S520
CHANGE CONNECTION TYPE OF EXTRACTED CONNECTION MANAGEMENT DATA PSVC → SVC/ SPVC
S530
EXTRACT CONNECTED ADJACENT NODE FROM ROUTING TABLE (E)
S540
ADJACENT NODE EXISTS ?
NO
S550
YES
COMPILE RELEASE REQUEST MESSAGE
S560
TRANSMIT RELEASE REQUEST MESSAGE
S570
WAIT FOR RELEASE REQUEST MESSAGE TO BE TRANSMITTED
S580
RECEIVE RELEASE RESPONSE MESSAGE
NO
S590
YES
RELEASE EXTRACTED CONNECTION MANAGEMENT DATA
S600
DELETE CORRESPONDING CONNECTION
S610
END

FIG.26

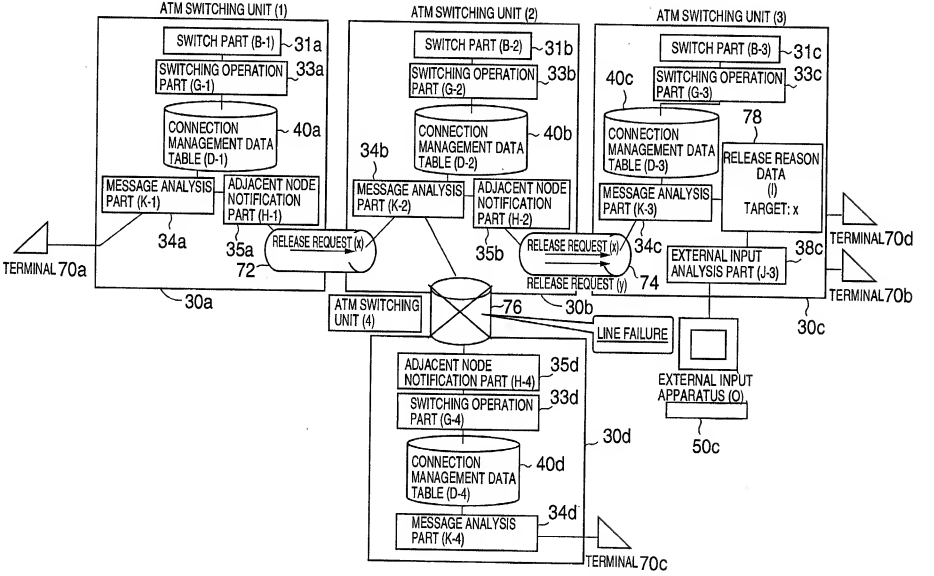

ATM SWITCHING UNIT (1)
SWITCH PART (B-1)
31a
SWITCHING OPERATION PART (G-1)
33a
CONNECTION MANAGEMENT DATA TABLE (D-1)
40a
MESSAGE ANALYSIS PART (K-1)
ADJACENT NODE NOTIFICATION PART (H-1)
34a
35a
72
RELEASE REQUEST (x)
TERMINAL 70a
30a
ATM SWITCHING UNIT (2)
SWITCH PART (B-2)
31b
SWITCHING OPERATION PART (G-2)
33b
CONNECTION MANAGEMENT DATA TABLE (D-2)
40b
34b
MESSAGE ANALYSIS PART (K-2)
ADJACENT NODE NOTIFICATION PART (H-2)
35b
RELEASE REQUEST (x)
RELEASE REQUEST (y)
34c
74
ATM SWITCHING UNIT (4)
76
30b
LINE FAILURE
ADJACENT NODE NOTIFICATION PART (H-4)
35d
SWITCHING OPERATION PART (G-4)
33d
CONNECTION MANAGEMENT DATA TABLE (D-4)
40d
30d
MESSAGE ANALYSIS PART (K-4)
34d
TERMINAL 70c
ATM SWITCHING UNIT (3)
SWITCH PART (B-3)
31c
40c
SWITCHING OPERATION PART (G-3)
33c
78
CONNECTION MANAGEMENT DATA TABLE (D-3)
RELEASE REASON DATA (I) TARGET: x
MESSAGE ANALYSIS PART (K-3)
TERMINAL 70d
EXTERNAL INPUT ANALYSIS PART (J-3)
38c
TERMINAL 70b
30c
EXTERNAL INPUT APPARATUS (O)
50c

FIG.27

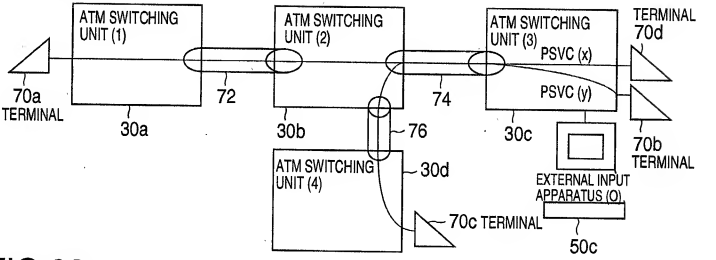

ATM SWITCHING UNIT (1)
ATM SWITCHING UNIT (2)
ATM SWITCHING UNIT (3)
TERMINAL 70d
PSVC (x)
PSVC (y)
70a TERMINAL
72
74
30a
30b
76
30c
70b TERMINAL
ATM SWITCHING UNIT (4)
30d
EXTERNAL INPUT APPARATUS (O)
70c TERMINAL
50c

FIG.28

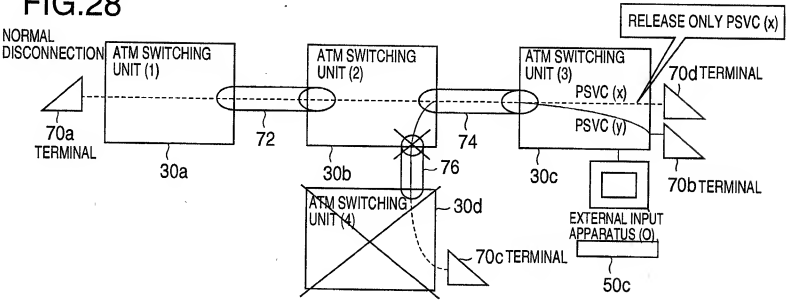
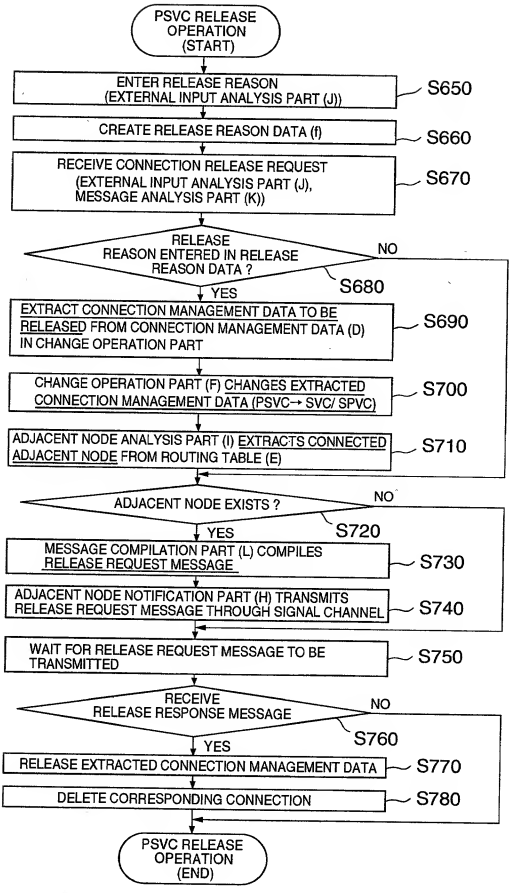
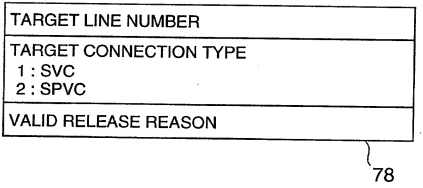

RELEASE ONLY PSVC (x)
NORMAL DISCONNECTION
ATM SWITCHING UNIT (1)
ATM SWITCHING UNIT (2)
ATM SWITCHING UNIT (3)
70d TERMINAL
PSVC (x)
PSVC (y)
70a TERMINAL
72
74
30a
30b
76
30c
70b TERMINAL
ATM SWITCHING UNIT (4)
30d
EXTERNAL INPUT APPARATUS (O)
70c TERMINAL
50c

FIG.29



JP2011-160007A

FIG.30



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